

Claims.

1. A device for restricting removal from the end of a tubular member of a collar or the like located on
5 the tubular member, the device comprising an axially extending portion for engagement in the end of the tubular member and a radially outwardly extending portion which in use is located outside the end of the tubular member and which extends radially
10 outwardly to a greater diameter than the internal diameter of the collar, thereby to restrict removal of the collar from the end of the tubular member.
2. A device as claimed in claim 1 wherein the tubular
15 member includes: plastics material; is made purely of a plastics material; or, is a multi-layer construction comprising one or more layers of plastics material bonded to one or more layers of metal; or, comprises one or more layers of plastics
20 material bonded to one or more layers of non-metallic material.
3. A device as claimed in claim 2 wherein the tubular
25 member has a multi-layer construction comprising an inner plastics material layer bonded to an intermediate layer of metal which is in turn bonded to an outer layer of plastics material.
4. A device as claimed in any one preceding claim
30 wherein the device is a hollow member thereby to allow fluid flow therethrough.
5. A device as claimed in any one preceding claim wherein the device takes the form of an insert for

the tubular member which is self retaining in the end of the tubular member in use.

- 5 6. A device as claimed in any one preceding claim wherein the device, or at least the axially extending portion thereof, comprises harder material than the inner wall of the tubular member.
- 10 7. A device as claimed in either claim 5 or 6 wherein the device is retainable in the end of the tubular member by threaded engagement.
- 15 8. A device as claimed in claim 7 wherein the device is provided on the external surface of its axially extending portion with a thread..
- 20 9. A device as claimed in claim 8 wherein the device is retainable in the end of the tubular member by cutting or forming its own thread into the tubular member.
- 25 10. A device as claimed in claim 9 wherein the thread on the device comprises a self tapping thread for cutting or forming into the internal surface of the tubular member.
- 30 11. A device as claimed in any one preceding claim wherein the device is provided with means to allow the device to be engaged in order to turn the device.
12. A device as claimed in claim 11 wherein the engagement means comprises a polygonal profile on

the radially outwardly extending portion to enable it to be gripped by a tool.

13. A device as claimed in claim 11 wherein the engagement means comprises a polygonal shaped recess or internal bore in the end of the device with the radially outwardly extending portion for engagement by a polygonal key.
14. A device as claimed in claim 11 wherein the engagement means comprises, at the end of the device to the rear of the radially outwardly extending portion, one or more slots which can be engaged by a tool or key for turning the device.
15. A device as claimed in any one preceding claim wherein the device is retained in the end of the tubular member by means of an interference fit.
16. A device as claimed in claim 15 wherein the device is provided on the external surface of its axially extending portion with a serrated or saw tooth profile.
17. A device as claimed in claim 15 wherein the device is provided on its axially extending portion with one or more outwardly angled teeth or barbs for engagement with the inner wall of the tubular member.
18. A device as claimed in claim 17 wherein the teeth or barbs are pressed from the body of the device.

19. A device as claimed in any one preceding claim wherein the device is retained in the end of the tubular member means of an adhesive applied between the device and the tubular member to secure the device in place.
20. A device as claimed in any one preceding claim wherein the radially extending portion of the device is circumferentially continuous.
21. A device as claimed in claim 20 wherein the radially extending portion comprises a circular flange.
22. A device as claimed in any one of claims 1 to 18 wherein the radially extending portion is non-circumferentially continuous.
23. A device as claimed in any one preceding claim wherein the device comprises a portion of outwardly tapering diameter from the axially extending portion towards the radially extending portion.
24. A device as claimed in claim 23 wherein the device further comprises a portion of enlarged diameter compared with the axially extending portion between the outwardly tapering diameter portion and the radially extending portion.
25. A device as claimed in any one preceding claim wherein the device includes a sealing means to seal between the device and the axial end of the tubular member.

26. A device as claimed in claim 25 wherein the sealing means is located between the radially outwardly extending portion of the device and the end of the tubular member.
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27. A device as claimed in claim 26 wherein the radially outwardly extending portion is provided with an annular groove or recess on its front radially extending surface to accommodate an annular sealing means.
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28. A method of restricting removal from the end of a tubular member of a collar or the like located on the tubular member, the method comprising the steps of providing a device according to any one preceding claim and engaging the axially extending portion of the device in the end of the tubular member thereby to restrict removal of the collar from the end of the tubular member.
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29. A method according to claim 28 wherein means to engage a bore of the tubular member are formed by use of tool means after insertion of said device into the end of the tubular member.
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30. A method according to claim 29 wherein the means to engage the bore of the tubular member are barbs or teeth pressed from a wall of the device in situ after insertion of the device into the end of the tubular member.
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31. A device for restricting removal from the end of a tubular member of a collar or the like located on the tubular member substantially as herein described

in accordance with or with reference to any one or more of the Figures of the accompanying drawings.

- 5 32. A method for restricting removal from the end of a tubular member of a collar or the like located on the tubular member substantially as herein described in accordance with or with reference to any one or more of the Figures of the accompanying drawings.
- 10 33. A device for sealing the axially facing end of a tubular member, the device comprising an axially extending portion for engagement in the tubular member, a radially outwardly extending portion which in use is located outside the tubular member and a
15 sealing means for sealing between the radially outwardly extending portion and the axially facing end of the tubular member.
- 20 34. A device as claimed in claim 33 wherein the sealing means is annular.
- 25 35. A device as claimed in claim 33 or 34 wherein the radially outwardly extending portion is provided in its front surface facing the end of the tubular member with a groove or recess for accommodating the sealing means.
- 30 36. A device as claimed in claim 35 wherein the groove or recess comprises an annular groove or recess for accommodating an annular sealing means.
37. A device as claimed in any one of claims 33 to 36 wherein the sealing means comprises an elastomer material.

38. A device as claimed in any one of claims 33 to 37 wherein the sealing means comprises an injected sealant material.
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39. A device according to claim 38 wherein the sealant is a silicone material.
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40. A device for sealing the axially facing end of a tubular member substantially as herein described with reference to any one or more of the figures of the accompanying drawings.

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